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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SHOSHO, CALLIE E

ART UNIT PAPER NUMBER

1714

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/694,043

Applicant(s)

HASEGAWA ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/28/03 & 3/24/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "55" and "47" have both been used to designate air opening (see page 31, lines 13-15 of the present specification).
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "55" has been used to designate both air opening and film seal (see page 31, lines 13-15 of the present specification).
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "43" has been used to designate both container and case (see page 30, line 18 and page 31, line 8 of the present specification).
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: reference character "52" found in Figure 2.
5. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any

amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 3-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites that the emulsion comprises "at least one of polyurethane emulsions and silicone emulsions". The scope of the claim is confusing in light of the use of the word "and" because it is not clear if either polyurethane emulsion or silicone emulsion is required or if both polyurethane emulsion and silicone emulsion is always required. If the former is true, it is suggested that "and" is changed to "or" in the cited phrase.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-2, 6, and 10-15 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2001-348523 taken in view of the evidence given in Sasaki (U.S. 5,883,653).

Pending formal translation and using machine translation of the reference, it is noted that JP 2001-348523 discloses ink jet ink comprising water, 100 parts particulate pigment such as carbon black, and 1-100 parts dispersant and resin emulsion. It is noted that the dispersant includes resin emulsions and that JP 2001-348523 discloses that two or more dispersants are used and thus, the ink comprises both dispersant and emulsion as presently claimed. It is disclosed that the particulate pigment possesses average particle diameter of less than or equal to 18 nm. It is further disclosed that the ratio of the standard deviation to the aggregate diameter is less than or equal to 0.4. Given that the aggregate diameter is less than 30 nm, it is calculated that the standard deviation is less than 12 nm. It is also disclosed that the ink is printed onto substrate using ink jet printer (abstract and paragraphs 4-5, 8-9, 15, 17, and 20). Although there is no explicit disclosure regarding the components of the printer, it is well known, as evidenced by Sasaki (col.1, lines 32-52), that ink jet printers conventionally inherently contain ink cartridge

that comprises container for the ink, recording head having nozzles from which ink is discharged, and carriage for the cartridge to form image on recording paper.

In light of the above, it is clear that JP 2001-348523 anticipates the present claims.

10. Claims 1-4, 6, and 9-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Hirasa et al. (U.S. 2003/0166742) taken in view of the evidence given in Sasaki (U.S. 5,883,653).

Hirasa et al. disclose ink jet ink comprising water, dispersant, 0.05-20% urethane emulsion, and 1-10% particulate pigment including self-dispersing pigment. The pigment includes carbon black, Pigment Red, Pigment Yellow, and Pigment Blue. The pigment possesses average particle size of 10-300 nm and standard deviation of the particle size distribution of the pigment of 10-50 nm. It is also disclosed that the ink is printed onto substrate using ink jet printer (paragraphs 2, 16-19, 22-23, 28, 43-46, 55-56, and 58-59). Although there is no explicit disclosure regarding the components of the printer, it is well known, as evidenced by Sasaki (col.1, lines 32-52), that ink jet printers conventionally inherently contain ink cartridge that comprises container for the ink, recording head having nozzles from which ink is discharged, and carriage for the cartridge to form image on recording paper.

In light of the above, it is clear that Hirasa et al. anticipate the present claims.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-348523 or Hirasa et al. (U.S. 2003/0166742) either of which in view of EP 1116757.

The disclosures with respect to JP 2001-348523 and Hirasa et al. in paragraphs 9 and 10 above are incorporated here by reference.

The difference between JP 2001-348523 or Hirasa et al. and the present claimed invention is the requirement in the claims of specific dispersant.

EP 1116757, which is drawn to ink jet ink, discloses the use of polyoxyethylene (n = 30-60) naphthyl ether in order to produce images having good sharpness and color reproducibility (paragraphs 12-14).

In light of the motivation for using specific surfactant disclosed by EP 1116757 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such dispersant in the ink of JP 2001-348523 or Hirasa et al. in order to produce images with good sharpness and color reproducibility, and thereby arrive at the claimed invention.

14. Claims 1-4, 6, and 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura et al. (U.S. 5,928,419) in view of Sasaki (U.S. 5,883,653) and Hirasa et al. (U.S. 2003/0166742).

Uemura et al. disclose ink jet ink comprising water, 0.1-10% polyurethane emulsion, 0.1-10% pigment, and dispersant present in amount of, for instance, 1%. The pigment possesses average particle diameter of 10-100 nm. It is disclosed that ink is placed into ink cartridge of ink jet printer and discharged onto substrate to form image (col.4, lines 41-46, col.6, lines 23-26, col.8, lines 54-63, col.9, lines 34-38 and 54-69, col.10, lines 18-22, col.12, line 2, col.19, lines 7-14, and example 8). Although there is no explicit disclosure regarding all the components of the printer, it is well known, as found in Sasaki (col.1, lines 32-52), that ink jet printers intrinsically conventionally contain ink cartridge that comprises container for the ink, recording head having

nozzles from which ink is discharged, and carriage for the cartridge to form image on recording paper.

The difference between Uemura et al. and the present claimed invention is the requirement in the claims of the standard deviation of the particle diameter distribution of the pigment.

Hirasa et al., which is drawn to ink jet inks, disclose the use of pigment wherein the standard deviation of the dispersed particle size distribution is 10-50 nm in view of storage stability, stability of jetting performance of the ink, and recording optical density (paragraph 56).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use pigment in Hirasa et al. that possesses standard deviation of the dispersed particle size distribution of 10-50 nm in order to produce ink with good storage stability, jetting performance, and optical density, and thereby arrive at the claimed invention.

15. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura et al. in view of Hirasa et al. as applied to claims 1-4, 6, and 9-15 above, and further in view of EP 1116757.

The difference between Uemura et al. in view of Hirasa et al. and the present claimed invention is the requirement in the claims of specific dispersant.

EP 1116757, which is drawn to ink jet ink, discloses the use of polyoxyethylene (n = 30-60) naphthyl ether in order to produce images having good sharpness and color reproducibility (paragraphs 12-14).

In light of the motivation for using specific surfactant disclosed by EP 1116757 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such dispersant in the ink of Uemura et al. in order to produce images with good sharpness and color reproducibility, and thereby arrive at the claimed invention.

16. Claims 1-4, 6-8, and 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hakiri et al. (U.S. 6,786,959) in view of EP 1041126.

Hakiri et al. disclose ink jet ink comprising water, 1-7% pigment such as Pigment Red 122, Pigment Blue 15 :3, and Pigment Yellow 138, and dispersant identical to that of presently claimed formula (1). It is disclosed that the pigment has average particle diameter D50 of not greater than 50 nm and standard deviation of the pigment particle diameter distribution less than the average particle diameter D50 which would clearly encompass less than one half of the average particle diameter as presently claimed. The dispersant is present in amount of 0.3-2 parts by weight per 1 part by weight pigment. It is disclosed that ink is used in ink jet printer comprising cartridge comprising container for the ink, recording head having nozzle from which the ink is discharged, and carriage that carries the ink cartridge (col.1, lines 15-22, col.2, lines 30-58, col.3, line 63-col.4, line 6, col.4, lines 41-45, col.4, line 64-col.5, line 18, col.5, lines 22-64, col.7, lines 59-65, and col.8, lines 21-29).

The difference between Hakiri et al. and the present claimed invention is the requirement in the claims of resin emulsion.

EP 1041126, which is drawn to ink jet inks, disclose the use of not less than 8% polyurethane emulsion in order to fix pigment onto substrate and improve rubbing/scratch resistance (paragraphs 20, 22, and 30-31).

In light of the motivation for using polyurethane emulsion disclosed by EP 1041126 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such polyurethane emulsion in the ink jet ink of Hakiri et al. in order to produce ink with good adhesion to the substrate that has improved rubbing/scratch resistance, and thereby arrive at the claimed invention.

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nakamura et al. (U.S. 2002/0112644) discloses ink jet ink comprising water, latex, dispersant, and pigment possessing average particle size of not more than 30 nm, however, there is no disclosure of the standard deviation of the particle diameter distribution of the pigment as presently claimed.

Sawada et al. (U.S. 5,772,746) and EP 767225 each disclose ink jet ink comprising water, emulsion, dispersant, and pigment possessing average particle size of not larger than 100 nm, however, there is no disclosure of the standard deviation of the particle diameter distribution of the pigment as presently claimed.

EP 933406 and JP 07305006 each discloses ink jet ink comprising water, pigment, emulsion, and dispersant, however, there is no disclosure of the average particle diameter of the

pigment or the standard deviation of the particle diameter distribution of the pigment as presently claimed.

Taniguchi et al. (U.S. 2001/0029273) discloses ink jet ink comprising water, pigment having volume average particle diameter of 20-200 nm and dispersant, however, there is no disclosure of the standard deviation of the particle diameter distribution of the pigment as presently claimed.

Shiego et al. (U.S. 6,702,889) discloses ink jet ink comprising water, pigment having average particle diameter of 20-200 nm, and dispersant, however, there is no disclosure of the standard deviation of the particle diameter distribution of the pigment as presently claimed.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
8/5/05